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EXAMINER

MILLS, DONALD L

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/775,348

Applicant(s)

YEMINI ET AL.

Examiner

Donald L. Mills

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08/27/01; 03/01/02; 01/13/03; 10/28/04; 03/16/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 44-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 44, the claim specifies *each coordinate label representing a complete path from said Node to a particular other, non-adjacent Node of said network* (See claim 44, lines 4-5.) However as seen from Figure 3, a node adjacent to the root node comprises a coordinate label, which includes the path from the root node to the adjacent node. Therefore, this coordinate label represents a complete path from the root node to an adjacent node, which contradicts the claim language. Further clarification is requested.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8, 12-23, 28-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Bosack (US 5,088,0323).

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Regarding claim 1, 33, and 44, Bosack discloses a method and apparatus for routing communications among network computers, which comprises:

Each node is assigned a set of one or more coordinate labels, each representing a path comprising one or more links or other nodes (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link. See column 3, lines 66-67'and column 4, lines 3-9.)

Each coordinate label is unique to the Node to which it is assigned (Referring to Figure 2, by definition each description (coordinate label) is unique to each gateway. See column 4, lines 3-9.)

A path between a first Node and a second, non-adjacent Node being determined from one of said coordinate labels assigned to said first Node and one of said coordinate labels assigned to said second Node (Referring to Figures 2 and 5, paths between the gateway and destination gateways are compiled based on the description of each data link between the gateway and destination gateways, furthermore the gateway determines whether the destination is a section of a specified network comprising another gateway, for example, when gateway 76 transmits a packet to destination gateway 104 the path must be known, based upon the description, in order for gateway 76 to forward the packet through the proper port. See column 5, lines 17-19; column 8, lines 15-24 and 66-67; and column 9, lines 1-5 and 39-43.)

Said network is configured according to said path (Referring to Figure 2, configures network according to the list of destinations and paths. See column 5, lines 17-21.)

Regarding claim 2, Bosack discloses *where said coordinate label represents a path between said Node to which said coordinate label is assigned and root node* (Referring to Figure

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2, the description represents a path between the destination gateway and the source gateway (root node). See column 4, lines 3-9.)

Regarding claim 3, Bosack discloses *where the coordinate label represents a path between said node to which said coordinate label is assigned at least one of a plurality of root nodes* (Referring to Figure 2, the description represents a path between the destination gateway and the gateway(s) (root node). See column 4, lines 3-9.)

Regarding claim 4, Bosack discloses *where at least one of said plurality of Nodes is a computer file* (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link attached to each node (a computer comprising files). See column 3, lines 66-67 and column 4, lines 3-9.)

Regarding claim 5, Bosack discloses *where at least one of said one or more links is a directory access path* (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link (a path for sharing files between computers). See column 3, lines 66-67 and column 4, lines 3-9.)

Regarding claim 6, Bosack discloses *where at least one of said plurality of nodes is a computer process* (Referring to Figure 2, paths between the gateway and destination gateways (in which the nodes utilize computer programs). See column 5, lines 17-19.)

Regarding claim 7, Bosack discloses *where at least one of said one or more links is a directory access path* (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link (a path for sharing files between computers). See column 3, lines 66-67 and column 4, lines 3-9.)

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Regarding claim 8, Bosack discloses *where at least one of said links is a virtual link* (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link (virtual in the sense that it exists as a stored path between devices). See column 3, lines 66-67 and column 4, lines 3-9.)

Regarding claims 12, 34, and 45, Bosack discloses *wherein each coordinate label representing a path comprises, in series, identifiers for links and nodes comprising said path* (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link (which is in series between the gateway and the destination). See column 3, lines 66-67 and column 4, lines 3-9.)

Regarding claims 13, 35, and 46, Bosack discloses *wherein each of said set of one or more coordinate labels is periodically updated to reflect changes in said path* (Referring to Figure 2, the metric information for a path is revised due to processing an incoming routing update. See column 6, lines 11-13.)

Regarding claim 14, Bosack discloses *wherein a node identifier is indexed to at least one of said set of one or more coordinate labels, where said at least one of said set of one or more coordinate labels corresponds to at least one of said plurality of nodes* (Referring to Figure 2, each gateway computes a metric composite (identifier indexed to labels) to determine the desirability of the data paths to destination computers via destination gateways. See column 4, lines 30-32.)

Regarding claim 15, Bosack discloses *wherein at least one of said coordinate labels contains path information from said network and a second network* (Referring to Figure 2, networks 54 and 56.)

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Regarding claim 16, Bosack discloses *where said path information from said second network indicates a backbone address* (Referring to Figure 2, gateway 100 comprises link information for connection to gateway 76, comprising an address.)

Regarding claims 17, 36, and 47, Bosack discloses *said first node is a source node and said second node is a destination node and data is routed from said source node to said destination node via said path* (Referring to Figure 2, paths between the gateway and destination gateways are compiled based on the description of each data link between the gateway and destination gateways and data is routed between the gateway and the destination gateways via the links. See column 5, lines 17-19.)

Regarding claims 18, 37, and 48, Bosack discloses *wherein said data is routed to a plurality of destination nodes* (Referring to Figure 2, paths between the gateway and destination gateways are compiled based on the description of each data link between the gateway and destination gateway and data is routed between the gateway and the destination gateways via the links. See column 5, lines 17-19.)

Regarding claim 19, Bosack discloses *wherein a tree of routing paths is computed from at least one of said set of one or more coordinate labels* (Referring to Figure 2, paths between the gateway and destination gateways (thereby forming a tree of paths) are compiled based on the description of each data link between the gateway and destination gateway and data is routed between the gateway and the destination gateways via the links. See column 5, lines 17-19.)

Regarding claim 20, Bosack discloses *wherein data is routed to at least one of said plurality of nodes according to said tree of routing paths* Referring to Figure 2, paths between the gateway and destination gateways (thereby forming a tree of paths) are compiled based on

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the description of each data link between the gateway and destination gateway and data is routed between the gateway and the destination gateways via the links. See column 5, lines 17-19.)

Regarding claim 21, Bosack discloses *wherein a multi-cast tree is computed from a plurality of said set of one or more coordinate labels* (Referring to Figure 2, Referring to Figure 2, paths between the gateway and destination gateways (thereby forming a tree of paths) are compiled based on the description of each data link between the gateway and destination gateway and data is routed between the gateway and the destination gateways via the links during broadcasts. See column 5, lines 17-19 and lines 28-60.)

Regarding claim 22, Bosack discloses *where data is routed to a plurality of said plurality of nodes according to said multi-cast tree* (Referring to Figure 2, Referring to Figure 2, paths between the gateway and destination gateways (thereby forming a tree of paths) are compiled based on the description of each data link between the gateway and destination gateway and data is routed between the gateway and the destination gateways via the links during broadcasts. See column 5, lines 17-19 and lines 28-60.)

Regarding claims 23, 38, and 49, Bosack discloses *where said set of one or more coordinate labels does not disclose information relating to a physical structure of said network* (Referring to Figure 2, a gateway is initialized including a description (coordinate label) of each data link, which does not relate to the physical structure of the network. See column 3, lines 66-67 and column 4, lines 3-9.)

Regarding claims 28 and 39, Bosack discloses *where said network is reconfigured based upon a second path upon the occurrence of an network event* (Referring to Figure 2, a change for

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the worse, a lost path, is propagated through the system to the gateway, which requires transmission along different paths. See column 6, lines 21-27.)

Regarding claims 29 and 40, Bosack discloses *where said event is the failure of a link on said path* (Referring to Figure 2, a change for the worse, a lost path, is propagated through the system to the gateway, which requires transmission along different paths. See column 6, lines 21-27.)

Regarding claims 30 and 41, Bosack discloses *where said event is the failure of a node on said path* (Referring to Figure 2, a change for the worse, a lost path comprising nodes, is propagated through the system to the gateway, which requires transmission along different paths. See column 6, lines 21-27.)

Regarding claims 31 and 42, Bosack discloses *where said event is the movement of a node on said path* (Referring to Figure 2, a change for the worse, a lost path comprising node movement, is propagated through the system to the gateway, which requires transmission along different paths. See column 6, lines 21-27.)

Regarding claims 32, 43, and 50, Bosack discloses *where said one or more coordinate labels is further comprised of coordinate labels from a first virtual network, and coordinate labels from at least one second network* (Referring to Figure 2, gateway 76 interconnects networks 54 and 56 which comprises link descriptions from both networks.)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosack (US 5,088,0323) in view of Stern (US 5,191,626).

Regarding claim 9 as explained above in the rejection of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *where at least one of said one or more links is an optical link.*

Stern teaches an optical communications system and method which comprises optical interconnections (See column 2, lines 5-8.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the links of Bosack as the optical links of Stern. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to integrate the routing method of Bosack in heterogeneous networks comprising optical access. An added benefit of doing so would allow easy integration with new and progressive networks.

Regarding claim 10 as explained above in the rejection of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *where at least one of said set of one or more coordinate labels includes a wavelength identifier.*

Stern teaches an optical communications system and method which comprises upon request the network control center assigns a suitable end-to-end path or paths, a waveband, and a channel (wavelength identifier).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the description of the links of Bosack to include the optical information of Stern. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to integrate the routing method of Bosack in heterogeneous networks comprising optical access. An added benefit of doing so would allow easy integration with new and progressive networks.

Regarding claim 11 as explained above in the rejection of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *wherein at least one of said set of one or more coordinate labels includes a wavelength of an optical link*.

Stern teaches an optical communications system and method which comprises upon request the network control center assigns a suitable end-to-end path or paths, a waveband (wavelength of an optical link), and a channel.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the description of the links of Bosack to include the optical information of Stern. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to integrate the routing method of Bosack in heterogeneous networks comprising optical access. An added benefit of doing so would allow easy integration with new and progressive networks.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosack (US 5,088,0323).

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Regarding claim 24 as explained above in the rejection statement of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *where said network is a MPLS network*.

Bosack teaches routing communications among network computers comprising gateways, which by definition interconnect two networks, such as, a land microwave network and a satellite network (See column 3, lines 32-40.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a MPLS packet based network in the system of Bosack. One of ordinary skill in the art would have been motivated to do so in order to conform to such a well-known standard.

8. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosack (US 5,088,0323) in view of Rekhter et al. (US 6,526,056 B1), hereinafter referred to as Rekhter.

Regarding claim 25 as explained in the rejection statement of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *where said nodes are assigned to said set of one or more coordinate labels through the use of a MPLS label switching table*.

Rekhter teaches tagging packets with network protocol information to forward packets from one link to another along an internetwork path from the source interface to the ultimate destination interface (See column 7, lines 39-65.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the packet tagging of Rekhter in the system of Bosack. One of ordinary

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skill in the art at the time the invention was made would have been motivated to do so in order to send packets from source to destination utilizing the most efficient path available.

Regarding claim 26 as explained in the rejection statement of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *where said path is used to calculate a MPLS routing table.*

Rekhter teaches tagging packets with network protocol information to forward packets from one link to another along an internetwork path from the source interface to the ultimate destination interface (See column 7, lines 39-65.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the packet tagging of Rekhter in the routing table system of Bosack. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to send packets from source to destination utilizing the most efficient path available.

Regarding claim 27 as explained in the rejection statement of claim 1, Bosack discloses all of the claim limitations of claim 1 (parent claim).

Bosack does not disclose *where said path is used to support MPLS explicit routing.*

Rekhter teaches tagging packets with network protocol information to forward packets from one link to another along an internetwork path from the source interface to the ultimate destination interface (See column 7, lines 39-65.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the packet tagging of Rekhter in the routing system of Bosack. One of

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ordinary skill in the art at the time the invention was made would have been motivated to do so in order to send packets from source to destination utilizing the most efficient path available.

Response to Arguments

9. Applicant's arguments filed May 17, 2005 have been fully considered but they are not persuasive.

Rejection Under 35 USC 102

On page 16 of the remarks, regarding claims 1, 33, and 44, the Applicant argues Bosack does not disclose *each coordinate label is unique to the Node to which it is assigned*. The Examiner respectfully disagrees. Bosack teaches each description is based upon the topological delay along the link, the bandwidth of the link, and the reliability of the link (See column 4, lines 5-9.) Which is as functionally unique as consistent with the Applicant's definition of unique as defined by the specification in describing the labels of Links such that no two Links adjacent to the same Node use the same label (See Page 8, lines 10-11.) Therefore, Bosack discloses *each coordinate label is unique to the Node to which it is assigned*.

On page 18 of the remarks, regarding claims 1, 33, and 44, the Applicant argues Bosack does not disclose *a path between a first Node and a second, non-adjacent Node being determined from one of said coordinate labels assigned to said first Node and one of said coordinate labels assigned to said second Node*. The Examiner respectfully disagrees. Bosack discloses, as seen from Figures 2 and 5, paths between the gateway and destination gateways are compiled based on the description of each data link between the gateway and destination, furthermore the gateway determines whether the destination is a section of a specified network comprising

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another gateway, for example, when gateway 76 transmits a packet to destination gateway 104 the path must be known, based upon the description, in order for gateway 76 to forward the packet through the proper port. The next hop is included as part of the path from the source to the destination gateway (See column 5, lines 17-19; column 8, lines 15-24 and 66-67; and column 9, lines 1-5 and 39-43.) Therefore, Bosack discloses *a path between a first Node and a second, non-adjacent Node being determined from one of said coordinate labels assigned to said first Node and one of said coordinate labels assigned to said second Node*. Note, should the claims be amended to reflect the description of the coordinate label as described in the specification one could overcome the prior art.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Mills whose telephone number is 571-272-3094. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donald L Mills



August 4, 2005



JOHN PEZZLO
PRIMARY EXAMINER